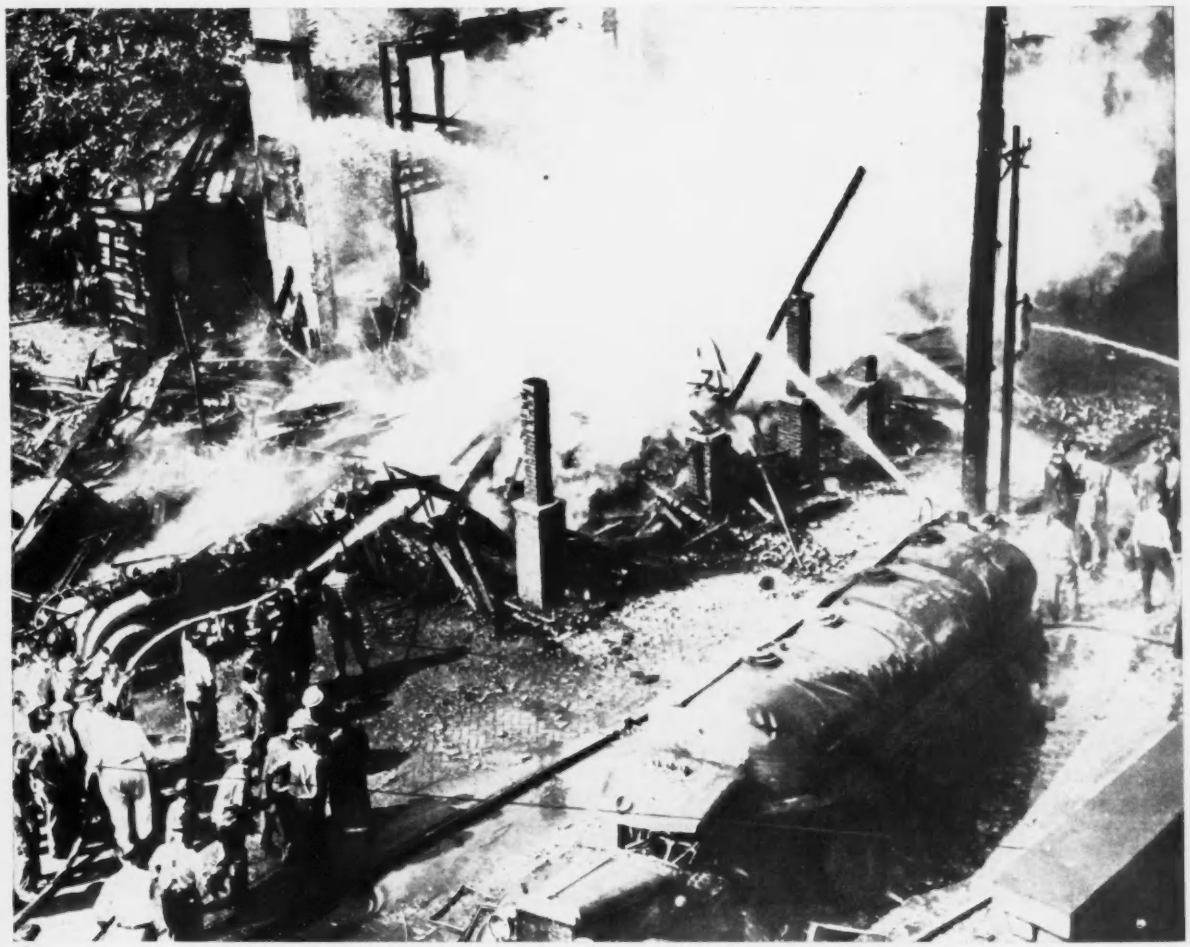
Volunteer Firemen

NOVEMBER 1939

NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch Street INTERNATIONAL Boston, Massachusetts



Acme

TANK TRUCK BURNS TEN HOMES

LAST August 30 a large tank truck broke an axle while passing through one of the main streets of Sharpsburgh, Pennsylvania. The truck was of the semi-trailer type with tank divided into four main compartments. All the compartments were loaded with gasoline.

When the axle broke the body of the truck somehow released some of its contents. The tank became a mass of flames and gasoline carried flames through the neighborhood as it flowed down the gutters. Adjoining frame homes were quick to take fire.

The local fire companies were unable to cope with this fire. Spreading along the street as gasoline floated on top of water used in fire fighting, and radiating from house to house while flying brands fell about the neighborhood, the fire rapidly assumed conflagration-like proportions.

The fire was finally extinguished by the men and apparatus of five local volunteer companies assisted by two city engines from Pittsburgh. Ten dwellings were destroyed with a total loss estimated at $100,000.

This fire calls attention once again to the urgent need of careful regulation of these huge cargoes of flammable liquids. No fire department can feel secure so long as improperly constructed and poorly maintained gasoline tank trucks pass through the streets of its city. Such trucks are a constant menace to surrounding property.

The N.F.P.A. publishes an ordinance suggested for adoption in cities and towns which wish to regulate the construction and operation of automobile tank trucks within their limits. Copies of this ordinance will be made available to any department interested.

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ARE YOU READY FOR WINTER?

WINTER is coming. It's causing those who live in the northern states and in Canada and in Alaska to take a lot of special steps to prepare for it. Laying in a good supply of fuel for the fires in stoves, taking the old overcoat out of the moth balls, taking down screens, fixing up all the broken windows, checking snow shovels —these are some of the things to be done getting ready for winter.

There are a lot of special steps a fire department has to take if it's going to continue to fight fires efficiently in the winter. There are a lot of things fire departments can urge building owners to do to help. Just for fun let's imagine a fire in a town where the fire department has been caught unawares by the winter's first howling blizzard and cold snap.

A home in a remote corner of town catches fire. The owner discovers the blaze, is unable to cope with it himself and having no telephone he jumps in his car and goes in person for the fire department. He lives on a main road where plows have been, but when he reaches the fire station he finds its long driveway unplowed. He runs through the snow to the engine door. There is a button there which sounds the horn on the roof. He pushes it. Nothing happens—the horn is frozen. He shakes the doors—they are locked.

He remembers that the driver lives in the house next door. He runs over and pounds on the door. There is some motion inside. The driver guesses it's a fire and comes out in his fire togs. He gets the breathless story from the man and runs to the fire house. He tries the horn again. Still frozen. They pull together to get the door open. It is cold inside. No one has started the stove.

The driver jumps to his seat. He opens the siren and kicks the starter. The siren works, the motor doesn't. The starter turns it once or twice and then stops. The battery is nearly dead. Hope for his house almost gone, the man gets out front and spins the crank desperately. Stiff summer grade oil struggles against him. He cannot turn another turn.

Another volunteer comes through the door. He takes the crank. The motor starts. They roll into the driveway up to the hubs in snow and get stuck. They struggle and push. More volunteers arrive, two or three. They push and push and finally push clear.

Away they go to the fire with siren shrieking to the countryside. The pumper's frozen radiator soon throws steam into the air. It comes back as water and forms as ice all over the open cab. It forms a sheet of ice over each man's face, clinging to the stubble in large drops.

When the truck finally arrives a large fire is burning in the basement, but the house still might respond to swift fire fighting.

The booster line is unreeled, crackling from its frozen dampness. A volunteer carries it into the house, hollers for water. Nothing happens. The pipe connection to the tank and perhaps the tank itself is frozen.

A crew works frantically to lay a line to a hydrant a hundred yards down the road. Others wrench soda-acid extinguishers from their brackets. The extinguishers are frozen; so is the hydrant. The chief orders the use of a garden hose that is in the garage. They hitch it up to an outside faucet. There is no water. Outside taps have frozen. They try to hitch hose to inside faucets, but there are no threads.

Neighbors arrive in great numbers. The chief orders them into a bucket brigade carrying water from the kitchen faucets to the basement stairs and dumping them on the fire. The house is now filling rapidly with smoke. Volunteers go through opening up windows.

The bucket brigade is steadily driven back. Fire gets into the walls and partitions. It burns through to the first floor.

Now smoke is billowing from the second story windows. No one dares enter the first floor. Ladders are thrown to the second story. Smoke makes it impossible to enter.

At last a crew has the hydrant thawed. A play pipe shoots water on the house. The flames are knocked out of a doorway. Nozzlemen follow them in. Another line is laid. It pours its contents through an upper window. Then firemen go through a second story window with it and dash out the small spots of fire left. At last the fire is out.

The ruins are covered with ice. Firemen are struggling with ladders of ice frozen fast to the ground. Water they have thrown at the fire has frozen wherever it did not come in actual contact with fire. Apparatus is a glassy mess. The house is a yawning blackness with great holes gaping through downstairs walls and the roof.

Firemen replace equipment on the pumper, climb aboard and head back for the fire station. They have done their best. Winter's cold, the cold that freezes water, has made their strongest efforts futile. The dispossessed family will have to find another place to sleep

Stop FIRE

With The Approach of Winter

We Strongly Recommend

Cleaning and Repairing All Chimneys

Dirty, Defective Chimneys are one of the Greatest Causes of Serious Fires.

Have Your Chimneys Pointed Up and Old Pipes Replaced Before You Start Your Winter Fires.

We Had 18 Chimney Fire Alarms in the Winter of 1938

All FROM Dirty and Defective Chimneys. Why Jeopardize Your HOME. Several Nice Homes Completely Destroyed from Dirty and Defective Chimneys around here.

Use Metal Cans For Your Ashes

DO NOT put your ashes in Wood Baskets they will burn, also the heat will open the seams permitting air to enter making a perfect flue. One Home Completely Destroyed in County last Winter from putting Hot Ashes in Paper Bag by the porch.

PREPARED BY THE

Independent Fire Company, Inc.

Fire Prevention Bureau

By C. F. REININGER, Captain.

The best way to avoid long dangerous runs this winter is to conduct a pre-winter fire prevention campaign now. This bulletin is being circulated by the Charles Town, West Virginia, Fire Company.

until the house can be rebuilt.

In this imaginary fire, everything has gone wrong. Actually it takes an awful stretch of the imagination to believe that all these things would happen at one fire. Actually, they probably never have. But all these misfortunes have actually happened and a lot more if you add up the experiences of all winter fires. There'd be a lot of similar experiences in every city that has real winter if the fire department didn't prepare for cold weather in advance.

One of the most important things a department can do in getting ready for winter is conduct a fire prevention campaign. Fire Prevention Week is the logical time for such a campaign to start but it can start later and still be very effective. On the other hand a Fire Prevention Week campaign that ends with Fire Prevention Week won't do all that can be done in getting building owners to prevent their fires during the winter. It takes steady pressure right into the winter. The Independent Fire Company of Charlestown, West Virginia, uses bulletins like that illustrated on the opposite page with telling effect and at little expense.

FIRE departments can save themselves many a winter run with disappointing results if they take the initiative in checking private "first aid" fire appliances. Especially they should check to see that extinguishers in unheated buildings are going to operate in cold weather. Soda acid and foam type extinguishers must be kept in heated enclosures. There are no anti-freeze solutions available that will work successfully in them.

Carbon tetrachloride, carbon dioxide, and "loaded stream" extinguishers are not affected by cold weather. Plain water extinguishers such as pump tanks can be freeze-proofed by filling with a solution of calcium chloride. The table at the top of this page shows the proper amount of calcium chloride for protection against various temperatures.

Fire pails and barrels are often of great value to fire departments called during the winter to fight fires in unheated buildings. These can be protected from freezing with calcium chloride. It is not necessary to refill them every winter or to change the solutions. Calcium chloride is more satisfactory than plain water for fire pail and fire barrel use even in the summer. The chemical retards evaporation by attracting moisture from the air. The solution does not weaken or deteriorate with age, it does not become foul or smell bad, and mosquitoes, which are frequently found breeding in fire pails, cannot live in calcium chloride solutions.

To Make Non-Freezing Water Solutions

The following mixtures will make 2½ gallons of a solution which will not freeze at the temperatures given. Commercial 75% calcium chloride (free from magnesium chloride) should be used.

Approximate Freezing Temperature Degrees F	Water	Calcium Chloride	Specific Gravity
10°	2 gals. 1 qt.	5 lbs.	1.139
zero	2 gals. 1 qt.	6¼ lbs.	1.175
10° below	2 gallons	7 lbs. 6 oz.	1.205
20° below	2 gallons	8 lbs. 6 oz.	1.228
30° below	2 gallons	9 lbs. 2 oz.	1.246
40° below	2 gallons	10 lbs.	1.263

Most fire departments, as a matter of course, prepare their own apparatus for winter use. It's foolish to hope to operate efficiently from an unheated building. Booster tanks would then have to be drained, there would be difficulty in taking care of hose, and on cold days difficulty might be experienced in getting motor apparatus started. On the other hand, there is no need to heat the station to ordinary living room temperature. Forty degrees is warm enough to safeguard tanks from freezing and give them enough reserve heat to last for fairly long cold runs. If runs are abnormally long the tank can be insulated with blankets, and if forced to stand idle at fires water in booster tanks can be drained.

In many fire departments pump-tank extinguishers filled with calcium chloride solution are substituted for extinguishers which would otherwise freeze during the winter. Anti-freeze for the radiator, while not so important if the fire house is kept heated, is mighty handy when apparatus is forced to stand idle during mopping up operations at fires. Alcohol may run into considerable money since it may be boiled away during pumping. Calcium chloride is too corrosive for radiator use. Solutions of ethylene glycol have neither of these disadvantages.

HOSE can easily be ruined in winter if not carefully handled and conscientiously dried after each use. Hose lines should never be shut down during cold weather until they are ready to be broken and drained.

Motor apparatus needs to be in top notch shape to operate reliably in winter. It needs the same type thorough overhaul that ordinary automobiles do. Oil should be changed to lighter grades, batteries should be checked. Thermostats or radiator shutters enable the engine to heat up quickly. Most departments keep tire chains on the wheels at all times during the snowy season.

The freezing of hydrants is a problem which has been met in a number of satisfactory ways. Special thawing devices are carried by some departments, but the best practice is to take steps which will prevent the hydrants from freezing in the first place.

While in many communities the water department or water utility has the responsibility for the care and maintenance of hydrants, they are of such importance to the fire department that the department may reasonably be expected to insist that the water authorities take the necessary steps to keep hydrants operative during colld weather.

The fire department in many places sees that all hydrants are set properly in the first place. Under the base of every hydrant should be dumped about a half barrel of small stones so that water may have a chance to drain away from the hydrant.

A NUMBER of departments have a regular routine of assigning a number of the members of the company to the duty of looking after certain hydrants on the town or village system. The men so assigned inspect the hydrants before cold weather to see that they drain properly and operate readily. These men also see to ft that the hydrants are properly cleared of snow after a heavy snowfall so that they may be kept accessible.

Most fire departments these days don't have to worry about main roads being so badly blocked with snow that apparatus equipped with chains can't get through. However, there is still a chance that equipment may have to be carried on foot part of the distance to fires in unplowed or blocked alleys and side streets. Here's a stunt that several departments use:

They take one or two short ladders, cover them with a salvage cover, and place upon them certain essential toolsl and equipment. Such a load can be taken to a fire, stretcher-fashion, by several men. It's a more satisfactory arrangement than having the men individually drag appliances through the snow. Furthermore, some needed item of equipment is not so likely to be overlooked.

BURNED DOLLARS

By Strafford Wentworth

FALL'S first frost hit Missouri last month. Jim Jones, owner, operator and plower of some one hundred acres, came into the farm house rubbing his hands together. He was trying to stop that numbness he'd picked up bedding down the stock.

"Going to be cold tonight, Martha."

Martha was Jim Jones' wife. Together they'd managed to make the farm support itself, even to put aside a little. Now she didn't answer.

Jones looked into the kitchen. Something was bubbling on the stove. Still at those preserves, he thought. Nice and warm here.

He backed out into the living room again. It felt cold after the warm kitchen. Martha would probably like a fire tonight; guess I'll get one going.

Jones went out to the kitchen again. He picked up an armful of wood from the box. Coming back into the parlor, he dumped it by the old barrel stove. Some of Wednesday's paper lay in the rocker. He took it and stuffed it in the stove; then piled on the wood. The draft on the smoke pipe was stuck. He cuffed it once or twice. Some soot rattled out and left it free. He threw a match through the door.

Jim heard Martha come in the kitchen door about a minute later. Probably been out to the road for the mail, he thought. Nice fire. Sure makes you feel good. Guess I better get Martha in here to enjoy it.

He turned to call. Martha came through the door before he could. She was carrying an envelope. "Jim, I . . ." she started. Then "Oh, my God!"

Jim watched her plunge back into the kitchen. What the devil could she be up to? The letter lay on the floor. She was filling something with water outside.

"Jim, quick, our money—it's in there—help me." She was terribly excited about something. Money must be in the envelope, he thought. Probably those peaches are burning. Guess I should have looked at the water in them. He got up to go out.

Then Jim watched a most amazing thing happen. Martha streaked in through the kitchen door slopping water from the floor pail. She cut across the floor toward the stove and dumped the bucket through the door into the fire. Then she plunked herself down on the floor and began crying.

"Martha, what the devil. . . ."

Out of the sobs came choked explanation: "It's . . . our money. Oh, Jim, I hid it in the stove."

Jim straightened up thunderstruck. He looked ruefully at his wife; then at the steaming stove. He thought of the old bus, a galloping thing with threadbare tires that hadn't had power enough to drag over a harrow he had wanted to borrow last spring. Now the hundred dollars that would have bought a good one was burned, burned in that smoldering stove. He went over and stooped down. Through the door he could see just a few remaining pieces of fire. Martha had pretty well drowned it.

The old girl sure acted quick that time, he thought, cheering up a little. They don't come any better than her. She was still sobbing, sitting on the floor.

Jim went out and got another bucket of water. He had no heart to question Martha. Might as well put the fire out and see if there's any chance, he thought. Maybe she rolled it up and some of the inside bills will be O.K. He threw the water in with his hands so as not to get things any wetter than necessary.

Half an hour later Jim and Martha had the contents of the stove spread out on the floor. He had learned that she had put the money, ten $10 bills, in an envelope and just dropped it in on the bottom of the stove. When they had removed all the remains of the fire Jim had built, Jim scooped out the ashes on the bottom of the stove with a shovel.

Piece by piece the two of them picked the ashes from the shovel, examined them and rejected them as newspaper. It seemed as though they would never find anything but that.

Then, suddenly, Jim's eye spotted something; a piece of ash straighter and stiffer than the rest on a square corner of which he could see the figure 10 with the word "ten" written across it. Carefully removing all other ash that covered it he lifted the charred remains of a $10 bill. Some of the lettering on it was illegible, of course,

and there were a couple of holes through it, but it was unmistakably a bill, one of the bills that had been lost.

It never occurred to Jim or Martha that this black ash of what had once been a major part of their wealth was worth anything. None the less, Jim preserved it, laying it carefully on the table. They had been searching the ashes for whole bills or perhaps substantial portions. Jim knew that the U. S. Treasury would give full value for as much as three-fifths of a bill and half value for anything greater than two-fifths. He hoped that at least one of the lost bills would meet this requirement.

Underneath this first ash was another, very similar but somehow stronger. Most of the writing on it could be read. He noticed that the paper of which the bills are made did not seem as burnable as other types of paper that were in the stove. Most of the newspaper surrounding the knot of bills he had found was burned almost to a powder.

Together they worked and carefully removed at last all ten of the bills. Martha gave a little shriek of joy over the last two. At least two-fifths of them was unburned, though they had been made oval in shape by the fire burning in from the edges. Here at least was some reward for their careful search.

They covered the fragments and ash which they had placed on the table with a box cover. Martha swept up the room. Next day would be time enough for Jim to go in town to the bank and try to find out how the two bills could be replaced.

In the morning Jim rolled out the old bus and headed for town with the two partly burned bills in an envelope in his pocket. Martha watched him from the steps. He shuddered as the car bounced around in the rocky ruts. Wonder how those tires stand it, he thought.

Jim got to town early. This was somewhat of an event in the old car. Last time he went in he remembered making the last six miles on the end of a rope behind a friendly truck driver. This time he got there before the bank even opened.

His route took him past fire department headquarters. A few of the boys were up already. Jim knew the chief. He had come around one day and helped Jim plan a water supply for the department's rural pumper. The chief was out front now taking it easy in the sun.

Jim had a hunch. These fire fighters must have run across burned money before. Maybe they knew something that would help him. It was worth a try. He pulled the car up on the opposite side of the street and went over.

"Remember me, Chief? I'm Jim Jones, fifteen miles south on the state highway."

"Sure I remember you, Jones. What's on your mind? Water?"

"No, Chief, I want to ask you a couple of questions. The wife and I burned up some money in the stove last night. She hid it there and I started a fire while she was out. We saved a couple of charred pieces and I'm trying to get new bills for them. Thought maybe you could help."

"I wouldn't be surprised if I could" said the chief. "Remember that gas station fire on the north road last month?"

"Sure do."

"Well, they had $65 in bills in the cash register. When we got the fire out and sprung the drawer open there wasn't anything but ash. Couldn't even recognize it as money. We were going to dump it out, but Burns, the owner, stopped us. He took the ashes and sent them to Washington somehow. Anyway he got the whole $65 back."

Jim's heart began to thump. Here was hope of an unexpected sort. "Gosh, do you know how he sent it?"

"Nope, don't know how he sent it, but I know now how it ought to be done. One of the boys wrote to Washington after he heard this and got all the dope. Seems that the Treasury redeems about $3,000,000 of mutilated money, most of it burned every year. They get about 150 packages of it every day. Sometimes they only get little pieces, but they redeem those too if you give them an affidavit swearing that the rest of the bill has been totally destroyed."

"But how can they tell the ashes of a really burned up bill from any other paper ash?"

"Seems they have a bunch of experts that know all the answers. They get a piece of tissue paper the same size as a dollar bill and, working with a needle they arrange and paste the pieces of ash on it. They do such a good job it's next to impossible to fool them. They know how to recognize 135 different gold and silver certificates, how to recognize five different size bills issued by 13,000 national banks, and they can spot a counterfeit bill no matter what condition it's in. They'll recognize your money, and replace it if it's anything better than powdered ash. It probably is. The paper that bills are printed on resists fire better than ordinary kinds. Plenty of people have burned up their money just the same way you did and got it back. There's a regular plague of such cases every fall."

"Gosh, even I can recognize my ashes as bills. The engraving is just as clear on the ash as it was on the paper. But if I try to put it in an envelope and mail it, it's going to get broken up sure."

"Wait a minute. I've got all the dope on sending it, too. It's in my desk. Come on in and I'll show it to you."

The chief led Jim into a small room back of a pumper. There was a desk covered with papers stuck in a corner and just enough room to get by the two chairs, one on each of its exposed sides. The chief sat down and began rummaging through the second drawer on the right.

"Some mess, this," he said. "Been working on annual reports. Ah! Here it is: 'Instructions Regarding The Preparation of Burned Paper Currency to be Forwarded to the Treasurer of The United States for Redemption.' Read this."

Jim read: "When paper currency has been burned, do not disturb it or the fragments thereof any more than is absolutely essential. If the money was flat when burned, do not roll or fold it. If in a roll, do not attempt to unroll or straighten it out. If in a purse, box, or other container when burned, it should be left therein if possible in order to prevent the charred parts from being lost or reduced to mere ashes. If coin or any other metal should be with the currency when burned, carefully remove it; do not send coin in the same package with burnt paper money. Charred fragments of currency must be of such size as to enable the experts to identify the notes as to kind and denomination, and if national bank or Federal reserve notes, as to bank of issue."

"Currency so badly burned as to be more or less brittle or inclined to fall apart should be carefully packed in cotton and boxed as found, without, if possible, disturbing it in any manner. The experts usually have no difficulty in ascertaining the value of money when carefully packed and boxed as described, and as a result are often able to identify and redeem currency which would otherwise be a total loss."

"Send all burned paper money addressed as follows: REDEMPTION DIVISION, Office of the Treasurer, U. S., Washington, D. C."

Last week Jim and Martha Jones drove to Jefferson City in their new car. It was a beautiful day; sky almost black it was so blue and the whitest clouds you ever saw. Millions of leaves, bright red and orange scudded along, swooping and dipping in a fresh west wind.

"It's a wonderful world," she said.

"Yea," Jim agreed.

VITAL *Scraps of Paper*

FIRE SAFE STORAGE FOR RECORDS WILL SAVE MANY DOLLARS AND MUCH TROUBLE.

IN your town hall and county court house are some pretty important pieces of paper. They concern your right to vote, marry and own property for one thing, and are important in other ways to the welfare of your whole community and everyone in it. They include such important documents as birth, marriage and death records, deeds of conveyance and trust, court decisions, tax lists and a host of other vital records.

What if the hall or court house burned down and took these records with it? There'd be inconvenience and irritation in most towns. Moreover there'd be a whale of an expense to replace most of the records. There'd be downright calamity due to the loss of many which could never be replaced.

Last year the city hall in Troy, New York, burned with almost total loss of the historical museum and old record files of the city. It was the merest chance of fortune that saved the current working records of the city from the same fate. They were stored in pitifully inadequate old masonry vaults with iron doors and wooden shelves. The fire started on the third floor, but these vaults were in the basement. Tons of fire department water kept them cool enough to save their contents.

In another case the Emanuel County Court House, "Most beautiful building in Swainsboro, Georgia," burned to the ground. Current and past tax records were found in ashes after the fire. The county officials had a feverish time reconstructing them before the revenues of the county were seriously impaired.

VITAL records should be protected without allowances for what the fire department may be able to do. The protection should be adequate to take the records safely through a conflagration, tornado, or other major catastrophe during which fire department energies and facilities may be fully occupied with other phases of the disaster.

Just how valuable certain records may be is hard to say. In Salina, Kansas, about a year ago a big automobile dealer's building burned. It was another of those amazing fires in "fireproof" buildings. Among the things that burned were the records of prospective customers, a laborious compilation of all those in the market for new cars. The dealer would have been hard put to it to say just how much this list was worth to him in dollars and cents. It wasn't one of the things "covered by insurance."

"Protection of Records," a publication of the National Fire Protection Association just issued in a 1939 edition, will be found helpful in this matter of determining the value of records. It explains how to make a survey of records and how to protect them according to their value. Copies of the pamphlet will be sent free to any member department upon request from headquarters. Others may secure the pamphlet for fifty cents by writing to the National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

THERE are three steps in deciding the type of safe, vault or other container needed for adequate protection of records: (1) determining the relative importance of the various records, (2) listing those for which maximum security and safety must be provided, and (3) estimating the probable severity and duration of a fire in the building where the records are kept.

The vault or safe selected must be adequate to withstand the maximum likely fire. Vaults provide the greatest protection. The weak point of a vault is usually the door. It is obvious that the door should provide as much protection as the walls of the vault.

Protection afforded by walls, doors, and safes is generally expressed in the length of time they will withstand a standard fire test, in which temperatures are increased with time according to an established formula. Actual fires may vary considerably in intensity. Vaults are usually used for vital records and can be designed to withstand test fires up to six hours. Record rooms may be used for important, yet less vital records. In these, combustible contents and furniture should be kept at a minimum and doors and walls of suitable resistance to probable fires be provided.

Where the amount of vital records is such that a large vault is not needed, a properly constructed safe provides effective protection. The best safes will give "4-hour" protection and are the types to provide in a majority of instances, particularly in buildings of ordinary combustible construction. Where the amount of combustible material is less, safes with 2-hour and 1-hour ratings may be adequate. For less important records which may be kept in such relatively low-hazard occupancies as fire-resistive office buildings, less protection is required.

PURCHASERS may be guided in securing the degree of protection needed through the labels and listings of Underwriters' Laboratories, Inc., of Chicago. These identify properly built vault doors and safes.

It is very difficult to tell about old safes, because it would be necessary to tear them apart or test them in a furnace to determine whether the design provides high or low resistance. Old iron safes may give protection varying from one half to two hours.

In the safety of records, correct handling plays an important part. No fire drill in a record office would be complete without providing for the placing of essential records in their vault or safe and the closing of safe and vault doors. Watchmen must be instructed to put away safely any records other employees may have overlooked.

In the fighting of a fire and cleaning up afterward there are some steps which will assist in preserving records. Hose streams should be played on or near vaults and other record containers which may be under or in contact with hot debris to cool them below danger points. While excessive water is to be avoided, wet papers are better than ashes. When a fire involves papers in filing drawers, these should be extinguished in place with the minimum of water possible, rather than dumping the papers out.

A SKILLED person can salvage a surprising amount of vital records from safes and containers after a fire even though these may have been subjected to fires more severe than those against which they were designed to afford protection. Record containers and safes should be taken out of fire ruins as soon as possible and cooled with water to permit opening. A thorough job of cooling should be done. Papers inside may have been heated well beyond their ignition temperature, and if not cooled, may take fire on being exposed to air. Even though considerable care is taken to prevent ignition, means of producing a fine spray should be at hand and also tubs of water in which heated records may be plunged.

FRICTION LOSSES

1939 Tests Show Range of Figures

IF YOU have a hose line layout with a 1-inch nozzle and a good stream, the flow will be about 200 gallons per minute. In allowing for loss of pressure due to friction in the hose you would allow about 10 pounds per 100 feet of hose. You would be guided by this figure because it is the one given in the fire stream tables which have for many years been the basis of fire department hydraulic calculations.

The above figure of 10 pounds for 200 gallons per minute flow is one you have used a lot and so you remember it without looking it up. But right here it might be a good idea to refer again to the table of friction loss in hose streams. You will find this table in the Crosby-Fiske-Forster Handbook of Fire Protection (Eighth Edition) on page 1050, or in Fire Stream Tables of the National Board of Fire Underwriters (Fourth Edition) page 25. Sure enough, the table shows 10.1 pounds pressure loss per 100 feet for a flow of 200 gallons per minute. But the accompanying text warns that in individual lengths of hose the friction losses may sometimes be as much as 50 per cent greater than the figure given in the table.

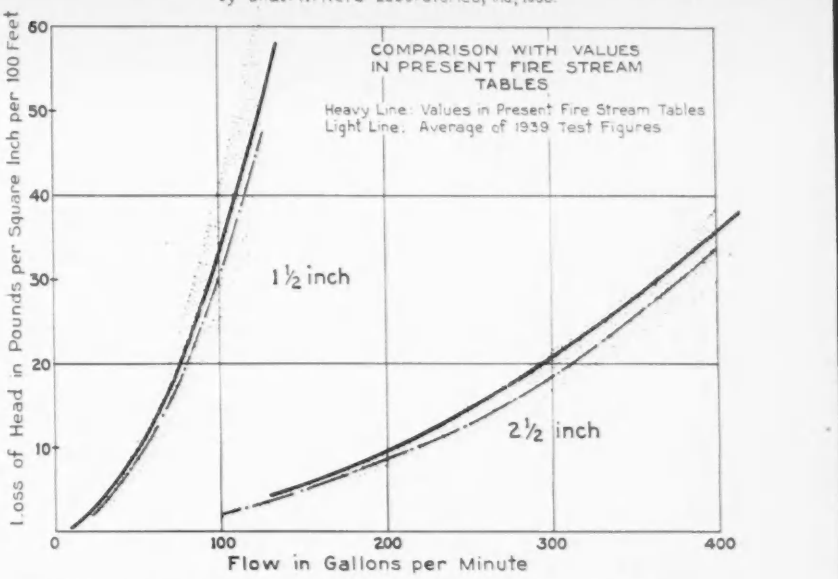
So the figure of 10 pounds, instead of being something quite exact, may in actual fact range from a figure 5 pounds higher to several pounds less.

The fire stream tables for 2½, 3 and 3½-inch hose were based on tests made in 1909 by engineers of the National Board of Fire Underwriters who noted the wide differences in friction loss in different lengths of hose. The basic research on friction loss had been done in 1888 and 1889 by the late John R. Freeman (member, N.F.P.A.). He noted this same variation and succeeded in getting hose manufacturers to change their hose design to give a smoother rubber lining and less friction loss.

At the annual meeting of the N.F.P.A. in Chicago this year, O. L. Robinson announced the result of some 1939 tests by Underwriters' Laboratories, Inc., on friction loss in fire hose. This research showed that modern hose bearing Underwriters' Laboratories' label is measurably superior, in friction loss characteristics, to the hose in 1909 or 1888. What this amounts to is shown graphically in the accompanying chart. For 2½-inch hose the figures are as given in the following table:

RANGE OF FRICTION LOSSES IN COTTON RUBBER-LINED FIRE HOSE

Shaded areas show range of results in tests on 18 samples of each size hose by Underwriters Laboratories, Inc, 1939.



FRICTION LOSS IN 2½-INCH HOSE POUNDS PER 100 FEET

Flow—Gallons per Minute	1909 Tables	Average of Tests on 18 samples 1939
150	5.8	5.0
200	10.1	8.9
250	15.3	13.2
300	21.2	18.6
350	28.4	25.7
400	36.2	33.5

The differences indicated by the above comparison are less than the differences which may be expected in individual lengths of hose. Different lengths of hose tested give different results. Mr. Robinson pointed out that the variations in samples of hose used in the 1939 tests were less than those in hose previously tested, indicating an improvement in the uniformity of hose on the market today. But some variation is to be expected. Take for example the results in 2½-inch hose with a flow of 200 gallons per minute. Here are the results in pounds per 100 feet friction loss for each of the 18 samples.

8.2	8.5	9.0
8.2	8.6	9.0
8.3	8.6	9.8
8.3	8.7	9.8
8.3	8.9	9.8
8.4	9.0	10.1

The rubber interior lining in some samples of hose may be smoother than in others. This is one of the factors causing one sample to be different from another.

When we speak of "2½-inch hose" we are referring to its nominal inside diameter. None of the samples tested was actually that size. The smallest was 2 31/64 inch and the largest 2 41/64 inch. When individual samples differ by as much as 10/64 (more than ⅛) inch, it is to be expected that the friction loss readings may vary in a like range.

Size and roughness are the most important factors causing variations in friction loss in hose. Friction losses also tend to be less as pressures increase because the hose stretches to a slightly larger diameter under higher pressures and for the same reason single-jacketed hose generally shows lower losses than double-jacketed.

The averages for 1½-inch hose appear to be close to those in the 1½-inch friction loss table. The table for 1½-inch hose was developed from more recent tests than those on which the 2½-inch tables are based, having been made by R. W. Hendricks at Underwriters' Laboratories in 1925.

The point emphasized by the 1939 research is that the values in friction loss tables should not be taken as exact ones. The present tables are comfortably within the range of the test results and there is no need to revise them. As a matter of fact, if any revision is to be considered it would be in the direction of expressing the tables in round figures like the following which gives friction losses in 5-pound units. Such figures are easy to remember and are plenty accurate for work on the fire grounds.

FRICTION LOSS IN 2½-INCH HOSE

Flow—Gallons per Minute	Friction Loss Pounds per 100 Feet
150	5
200	10
250	15
300	20
350	25
400	35

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Volunteer Firemen

Volume 6 **Number 11**

Published by the National Fire Protection Association, a voluntary non-profit organization, 60 Batterymarch Street, Boston, Mass.

Percy Bugbee — **General Manager**
Robert S. Moulton — **Technical Secretary**
Horatio Bond — **Chief Engineer**
Warren Y. Kimball — **Fire Record Department**
Strafford Wentworth — **Associate Editor**

November, 1939

SEVERAL years ago farmers in the neighborhood of Palatine, Illinois, organized and equipped a rural fire department. The rural apparatus was housed in Palatine, supported by the league of farmers desiring protection, and manned by the men of the Palatine Fire Department.

When the campaign for providing fire protection to the farms around Palatine was going on, a farmer named Alfred Porep was one of the most ardent campaigners. He worked hard to build up membership in the league and interested himself in the manner in which the department was to be equipped and organized. The efficient Palatine Rural Fire League of today is largely due to his efforts.

Last summer Alfred Porep's big barn burst into flames in a manner which identified the cause as spontaneous ignition. He called the rural fire trucks which his efforts had provided. As prearranged among members of the Palatine Rural Fire League, neighboring farmers rushed to the scene.

When the fire trucks arrived, the barn and outbuildings were beyond saving, and the house was already ignited by exposure. The trucks, each with a water supply of 450 gallons in tanks, were put into service at once. While their streams covered the house, farmers with their milk wagons brought can after can of water to the trucks, keeping the tanks full. Bystanders marveled at the efficiency of such an unconventional water supply. Firemen made the best advantage of it and soon had the fire at the house in hand.

Though Alfred Porep lost his barn in this first severe test for the Palatine Rural Fire League, his work of several years ago saved his house. He learned that he had not misplaced his trust in the value of such fire protection.

Commenting on the fire the *Palatine*

Enterprise said: "The Palatine Rural Fire League has proven its worth and its efficiency beyond any shadow of a doubt."

Well, we know that we don't need to convince our members of the value of rural fire departments. The number of replies we've had from Chief Paul O. Johnson's story in the September issue, and Chief Dan MacFarland's article in October proves that Volunteers are eager to assume the responsibility of farm fire protection. This story from Palatine is just another illustration of what a well organized department can do, made more dramatic by a "human interest" angle.

MORE departments take advantage every month of the economical membership plan especially designed for volunteers. Twenty men receive VOLUNTEER FIREMEN at their homes and valuable other N.F.P.A. material goes to headquarters at a total cost of only $10.00.

Last month 8 departments with 160 men joined the Volunteer Firemen's Section for the first time. In addition 36 departments with 813 men renewed membership. This increases the total enrollment to 686 departments and 15,137 men. The following departments are newly enrolled:

Monticello Volunteer Fire Department, Monticello, Arkansas.

East Port Chester Fire Department, East Port Chester, Connecticut.

Monson Fire Department, Monson, Massachusetts.

Battle Mountain Volunteer Fire Department, Battle Mountain, Nevada.

Edgewood Hose Company No. 2, Rotterdam, New York.

Peters Cartridge Division, Remington Arms Company, Kings Mills, Ohio.

Genoa City-Bloomfield Fire Department, Genoa City, Wisconsin.

Porcupine Volunteer Fire Department, Porcupine, Ontario.

A Problem Question FOR NOVEMBER

Suggested for discussion at company and department meetings this month

96

What special fire hazards will you expect to find during the Christmas Holidays?

The answer to the problem question for October will be found on page 6.

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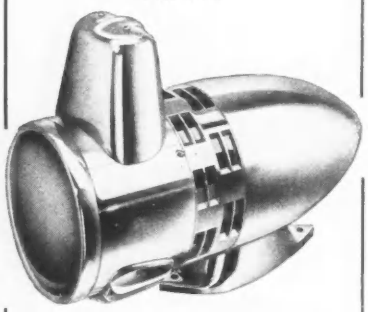

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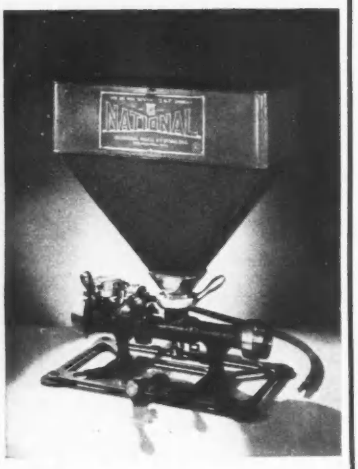

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PYRENE PRIZE LETTER CONTEST

THE letters winning first and second prize in this month's Pyrene Prize Letter Contest describe experiences where an extinguisher was instrumental in preventing loss of life or at least more serious injury. They are worthy of prizes for they illustrate beyond a doubt the value of first aid equipment in the early moments of fires where human life is endangered. Probably no other equipment could have been brought to the scene in time to save these two men.

Why don't you enter the contest next month? You must know of some experience worthy of a prize. Read the contest rules below.

FIRST PRIZE—$10.00

HERBERT GATES
Volunteer Fire Department
McGregor, Iowa

Shudders at What Might Have Happened

Had it not been for a fire extinguisher, I probably would not be writing of this experience today.

One morning, about a year ago, I was working in a garage, washing a hydraulic car jack in gasoline. During the washing some of the gasoline splashed on my overalls and on the floor where I was standing. Suddenly, I don't know how, the gasoline burst into flame, and I was standing in a pool of fire. My overalls were ignited almost instantly.

I moved away from the fire as quickly as I could, and sat down on the floor trying to smother the flames, and at the same time shouting for the fire extinguisher. A mechanic ran for the 1-quart carbon tetrachloride extinguisher. The liquid extinguished my clothing instantly.

I suffered painful burns on my leg, but I shudder to think of what might have happened if the fire extinguisher had not been close at hand.

SECOND PRIZE—$3.00

ROY W. LUNDQUIST
Fire Department
Worcester, Mass.

Extinguisher Saved a Life

A large, empty motor bus, the kind with engine in the rear, was heading for a terminal to begin service one morning when motor trouble developed. Two mechanics were summoned and went to work in the motor compartment. They traced the trouble to the gasoline line.

When they tried to repair the line they spilled a considerable amount of gasoline on their clothing. One of the mechanics was so dangerously soaked that he returned to the garage to change his clothing. The other went on with the work and finished the repairs.

When he had done, he tried to start the engine with the starter switch in the motor compartment. Instantly there was a flash and a roar as the spilled gasoline took fire. The mechanic crawled out of the compartment, lay down in the gutter, and tried to beat out the flames with his hands.

Luckily the bus driver, who had been watching the repair work, saw the accident. He dashed for the carbon tetrachloride extinguisher he kept in the cab and returned in time to save the mechanic's life. Then he extinguished the subsiding flames in the motor compartment.

It is perfectly evident that, had the extinguisher not been at hand, and had the driver not acted quickly, this mechanic might have had deeper burns and possibly lost his life. As it was he spent thirty-seven days in the hospital.

THIRD PRIZE—$2.00

W. G. ROBERTS, *Chief*
Volunteer Fire Department
Union Grove, Wisconsin

Gasoline Tank Explosion Prevented

About six weeks ago an alarm came in from a farm about 2½ miles from our village. Seven firemen rushed to the fire house for the truck. We made the run to the fire in about three minutes.

When we arrived we found a pressure gasoline stove entirely enveloped in flames. One fireman grabbed one of the 2½-gallon foam extinguishers we carry on the truck, turned it over, and applied the stream to the fire. Before the extinguisher was half discharged he had the fire completely out.

Afterwards we unscrewed the cap of the supply tank. When the threads let go it blew across the room, indicating that an enormous pressure had developed in the tank. It would probably have blown up in another minute or two, had the fire not been put out. If this had happened it would have set fire to the whole house, and, since the only water supply was the 300 gallons we carry on the truck, the house would probably have been a total loss.

HONORABLE MENTION

GEORGE L. LACEY, *Chief*, Garnett Fire Department, Garnett, Kansas.

CHARLES B. ROWE, Delaware Hook and Ladder Company, Volunteer Fire Department, Kenmore, New York.

CONTEST RULES

1. Contestants in the Pyrene Prize Letter Contest must be members of their local fire department.
2. Letters are to describe actual experiences where an approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experience.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 8th of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letters to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

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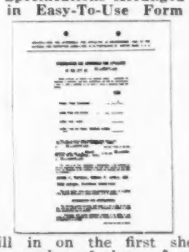
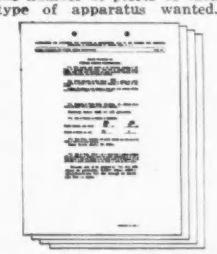
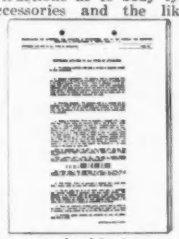
Specifications Arranged in Easy-To-Use Form



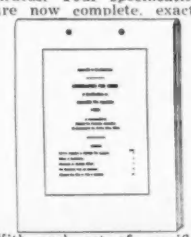
Fill in on the first sheet the number of pieces of each type of apparatus wanted.



For each type of apparatus there are four sheets. Fill in on these the special provisions: size of pump, instructions as to body type, accessories and the like.



Then attach this 8-page folder containing provisions applying to all types of apparatus. Your specifications are now complete, exact.



With each set of specifications is a 12-page appendix containing information for users.

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The specifications are national standard, prepared by the N.F.P.A. Committee on Municipal Fire Apparatus, under the chairmanship of J. N. Sullivan, Commissioner of Public Safety and Chief of the Fire Department, Utica, N. Y., and adopted at the annual meeting of the National Fire Protection Association this year.

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